

Search Report

3	354	(("9837577") or ("9521209") or ("9422165") or ("9104942") or ("8904444") or ("8700346") or ("6368567") or ("6361679") or ("6359006") or ("6355566") or ("6355553") or ("6355182") or ("6355107") or ("6350699") or ("6342194") or ("6335288") or ("6329297") or ("6325948") or ("6322756") or ("6322714") or ("6319856") or ("6318384") or ("6316369") or ("6313042") or ("6312502") or ("6306772") or ("6303513") or ("6303512") or ("6290918") or ("6290859") or ("6288357") or ("6287413") or ("6284661") or ("6281135") or ("6280597") or ("6277763") or ("6276168") or ("6274058") or ("6268292") or ("6267840") or ("6264788") or ("6261977") or ("6261524") or ("6258171") or ("6255222") or ("6254666") or ("6251764") or ("6251758") or ("6245489") or ("6242350") or ("6239006") or ("6235214") or ("6228772") or ("6224677") or ("6221771") or ("6216708") or ("6214089") or ("6207583") or ("6207326") or ("6200412") or ("6199506") or ("6197699") or ("6193802") or ("6184132") or ("6183713") or ("6179913") or ("6174373") or ("6165273") or ("6162957") or ("6160296") or ("6160158") or ("6156839") or ("6149984") or ("6147011") or ("6146606") or ("6143084") or ("6139983") or ("6136214") or ("6136211") or ("6135128") or ("6133389") or ("6127278") or ("6127269") or ("6126847") or ("6120844") or ("6116186") or ("6110836") or ("6107215") or ("6107192") or ("6107152") or ("6106790") or ("6106737") or ("6104137") or ("6093659") or ("6090208") or ("6087679") or ("6087268") or ("6083298") or ("6082374") or ("6081334") or ("6071353") or ("6066566") or ("6066519") or ("6060400") or ("6060397") or ("6051505") or ("6046115") or ("6043201") or ("6042887") or ("6036821") or ("6035803") or ("6029602") or ("6027547") or ("6025271") or ("6024045") or ("6023007") or ("6010635") or ("6010605") or ("6008129") or ("6004180") or ("5994240") or ("5990615") or ("5988187") or ("5983829") or ("5976702") or ("5976222") or ("5972795") or ("5972743") or ("5968844") or ("5968279") or ("5965786") or ("5963833") or ("5958138") or ("5945350") or ("5935874") or ("5935540") or ("5935334") or ("5925577") or ("5925421") or ("5919285") or ("5913127") or ("5912186") or ("5910294") or ("5908319") or ("5906797") or ("5902403") or ("5900103") or ("5882489") or ("5879646") or ("5877392") or ("5874363") or ("5868852") or ("5861065") or ("5858065") or ("5849643") or ("5849639") or ("5847206") or ("5840610") or ("5832746") or ("5827785") or ("5827408") or ("5824434") or ("5817578") or ("5817575") or ("5811631") or ("5810936") or ("5807786") or ("5795831") or ("5786073") or ("5780713") or ("5779763") or ("5776551") or ("5763326") or ("5763021") or ("5762893") or ("5762818") or ("5759237") or ("5756400") or ("5753776") or ("5738909") or ("5733827") or ("5733472") or ("5730779") or ("5728642") or ("5716549") or ("5714011") or ("5711934") or ("5709772") or ("5705080") or ("5705029") or	USPAT	2002/04/19 14:24
Search History	4/19/02 2:44:45 PM	Page 2		

4	34	perfluorotripentylamine or (perfluorotripentyl adj amine)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2002/04/19 14:44
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-----claim tree-----

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-----112-----

claim# 9 contains the word -> prefer
claim# 9 contains the word -> such as
claim# 9 contains the word -> for example
claim# 9 contains the word -> similar
claim# 9 contains the word -> substantially
claim# 9 contains the word -> type
claim# 9 contains the word -> relatively
claim# 9 contains the word -> as described
claim# 9 contains the word -> significant
claim# 9 contains the word -> significantly
claim# 9 contains the word -> substantial
claim# 9 contains the word -> less than about

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5683473
5556577
5238587
5746776
5676705
5683977
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6461387
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5267455
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-----classlist-----

8/137
8/142
510/342
510/505
510/340
134/40
510/291
510/466
510/506
510/417
134/2
134/10
134/26
510/501
8/111
510/515
134/1
134/12
510/432
252/861
510/312
424/761
252/891
210/631
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424/642
564/163
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510/492
510/426
424/7027
424/7014
424/7022
134/38
424/701
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210/615
510/408
510/409
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424/63
510/119
424/7021
512/1
424/62
512/5
514/2

514/159
512/20
210/602
514/458
514/557
424/60
510/513
424/762
516/53
424/49
424/59
510/285
424/401
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514/861
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514/887
514/937
210/622
38/144
510/212
510/277
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514/846
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210/610
510/348
510/349
510/352
422/5
510/412
252/364
510/175
510/177
427/3932
210/912
510/411
510/461
570/134
252/881
514/844
514/828
514/725
514/817
510/424
210/910
514/168
510/286
514/474
510/102
512/21

-----keywords-----

polarity conductivity hydroxide acididic ionic ph aldehyde ester glycol alcohol water antistain perfume de odorizer fluorinated ether hydrofluoro ether fluoro ether perfluoro dry clean hydrofluoroether ether fluo rinated wash laundry drying rinsing spin fabric static flash fluids distilled contaminated liquid solvent ranging liquids removing oily hydrophobic solvent separating boil boiling distillation adding separation immiscible absorbed ranges contaminants absorption textile satisfactory liters agitating aldehydes keton es glycols ethers alcohols co-solvent non-polar polar radiation inorganic organic particulates cleaning a gents deterrents walls fluid entering drain primarily storage tank particles leaving dirt discharge agitat ion agitated condensed charged inlet consumer panel apparatus includes instances washing apparatus silk w ool suspension exposing rotating contacted fragrances hydrophilic hydrophobic ultraviolet surfactants int eger hydrocarbons oily soils oily vapor viscosity solubility surface tension te nsion removing thereafter introducing fabric cleaning broad manufacturing rigid Spray cleaning Spray subs trates circuit boards printed circuit pressurized carbon dioxide dioxide non-aqueous solvent petroleum ni trogen environmental ozone hydrocarbon solvents halogenated hydrocarbon hydrocarbon halogenated solvents Non-aqueous drying cycle spin swell saturated dry cleaning classes Water-based formulations washing machi nes softening wash cycle fabric softeners detergents Cleaning automatic washing additives soils stains cl eaned fibers temperatures additive working fluid inert wash liquor liquor wash fabrics clothing launderin g fluorinated flash microemulsion emulsion pourable acidic liquid acidic alkaline buffer ketone glycol es ter ether glycol alcohol ether surfactant enzyme fragrance bleach enzymes washing laundry laundry fabric

washing washing fabric perfluorocarbon hydrofluoroethers fluorocarbon hydrofluorocarbons fluoroethers ant
istatic solution flashpoint nonflammable flammable hydrofluoroether fluoroether
hydrofluorochloroether fluoro -----

-----references-----

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classes:1 8/142 1 8/137 1 8/1491 1 8/1492 1 8/158 1 8/159 1 510/285 1 510/289 1 510/290 1 510/291 1 510/4
05 1 510/407 1 510/413
score: 936

keywords: ester;glycol;alcohol;water;fabric;flash;ranging;adding;textile;agitating;co-solvent;polar;organ
ic;agitation;agitated;condensed;charged;silk;wool;rotating;hydrophilic;hydrophobic;surfactants;oily;vapor
;removing;pressurized;carbon dioxide;dioxide;hydrocarbon;Non-aqueous;dry cleaning;formulations;detergents
;Cleaning;soils;stains;cleaned;temperatures;fabrics;clothing;flash;surfactant;fabric;solution;Description
;INVENTION;relates;methods;employed;apparatus;claims;used;means;pressures;does;

- e need for a container that can hold
CO.sub.2 at supercritical temperatures and pressures makes it difficult or
impossible to practice the process on conventional dry-cleaning apparatus.
Further, because the CO.sub.2 is supercritical, there is no phase boundary
in the **rotating** drum, such as the liquid-vapor boundary found in most
traditional dry cleaning process. The presence of the phase boundary in
the **rotating** drum (particularly in horizontal **rotating** drums) exerts a
physical scrubbing and penetrating action on the garments that enhances
the cleaning thereof.

U.S. Pat. No. 5,377,705 to Smith et al. describes a precision cleaning
system in which a work piece is cleaned with a mixture of CO.sub.2 and a
co-solvent. Smith provides an entirely non-aqueous system, stating: "The
system is also designed to replace aqueous or semi-aqueous based cleaning
processes to eliminate the problems of moisture damage to parts and water
d

- C. In one embodiment; the surfactant
contains a CO.sub.2 -philic group; in another embodiment, the surfactant
does not contain a CO.sub.2 -philic group.

DETAILED DESCRIPTION OF THE INVENTION

The term "clean" as used herein refers to any removal of soil, dirt, grime,
or other unwanted material, whether partial or complete. The invention may
be used to clean nonpolar stains (i.e., those which are at least partially
made by nonpolar **organic** compounds such as **oily soils**, sebum and the
like), **polar** stains (i.e., **hydrophilic** stains such as grape juice, coffee
and tea stains), compound **hydrophobic** stains (i.e., stains from materials
such as lipstick and candle wax), and particulate soils (i.e., soils
containing insoluble solid components such as silicates, carbon black,
etc.).

Articles that can be cleaned by the method of the present invention are, in
general, garments and fabrics (including woven and non-woven) formed from
materials

- such as cotton, wool, silk, leather, rayon, polyester, acetate,
fiberglass, furs, etc., formed into items such as clothing, work gloves,
rags, leather goods (e.g., handbags and brief cases), etc.

Liquid dry-cleaning compositions useful for carrying out the present
invention typically comprise:

- (a) from 0.1 to 10 percent (more preferably from 0.1 to 4 percent) water;
- (b) carbon dioxide (to balance; typically at least 30 percent);
- (c) surfactant (preferably from 0.1 or 0.5 percent to 5 or 10 percent); and
- (d) from 0.1 to 50 percent (more preferably 4 to 30 percent) of an **organic**
co-solvent.

Percentages herein are expressed as percentages by weight unless otherwise
indicated.

The composition is provided in liquid form at ambient, or room,
temperature, which will generally be between zero and 50.degree.
Centigrade. The composition is held at a pressure that maintains it in
liquid form within the specified temperature range. The cleaning step is

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classes:1 510/285 1 510/405 1 510/407 1 510/432 1 510/466 1 510/500
score: 935

keywords: glycol;alcohol;water;wash;fabric;flash;distillation;ranges;contaminants;textile;glycols;co-solvent;polar;inorganic;organic;agitation;surfactants;integer;hydrocarbons;viscosity;removing;carbon dioxide;dioxide;nitrogen;environmental;hydrocarbon;halogenated;solvents;dry cleaning;Cleaning;additives;stains;cleaned;additive;wash;fabrics;clothing;flash;alkaline;surfactant;bleach;washing;fabric;Description;INVENTION;employed;used;means;does;appreciably;

- s supply, cleaning tank and condenser.
The machine may further comprise a means for **agitation**. The means for **agitation** may be, for example, a mechanical device like a mechanical tumbler, or a gas-jet agitator. The art recognized machines which may be used in this invention (e.g., when a densified gas is used) may be found in U.S. Pat. Nos. 6,012,307, 5,943,721, 5,925,192, 5,904,737, 5,412,958, 5,267,455 and 4,012,194, the disclosures of which are incorporated herein by reference.
- When dry cleaning for example, fabrics, like clothing or garments, with the biodegradable functionalized **hydrocarbons** or silicon comprising solvents and the **surfactants** described in this invention, the type of machine that may be used for the dry cleaning process is the same or substantially the same as the commonly used dry cleaning machines used for dry cleaning with perchloroethylene. Such machines typically comprise a solvent tank or feed, a
- mitted only to the extent that the temperature and pressure allow for the fabric to be cleaned. The pressure is often from about 14.7 to about 10,000 psi, and preferably, from about 200 to about 5,000 psi, and most preferably, from about 250 to about 3,000 psi, including all ranges subsumed therein. The temperature is often from about -30.0 to about 100.degree. C., and preferably, from about -5.0 to about 70.0.degree. C., and most preferably, from about 0.0 to about 45.degree. C., including all ranges subsumed therein.
- It is also noted herein that optional additives may be employed when cleaning with the **surfactants** described in this invention. Such optional additives include an oxidizing agent, like hydrogen peroxide, and an **organic** bleach activator such as those represented by the formula:
##STR3##
- wherein n is an **integer** from about 0 to about 20 and X is hydrogen or SO₃ M and M is hydrogen, an alkaline metal or an immod
- ium cation. A more detailed description of such additives may be found in U.S. Pat. No. 5,431,843, the disclosure of which is incorporated herein by reference.
- Other optional additives that may be employed to clean with the **surfactants** described in this invention include anti-static agents and deodorizing agents. Such anti-static agents typically include C₈-C₁₂ alcohol ethoxylates, C₈-C₁₂ alkaline **glycols** and glycol esters. The deodorizing agent, on the other hand, typically includes **fragrances** such as those described in U.S. Pat. No. 5,784,905, the disclosure of which is incorporated herein by reference.
- Still other optional additives include viscosity modifiers like propylene glycol and sodium xylene sulphonate. As to the amount of optional additives used with the **surfactants** of the present invention, such an amount is limited only to the extent that the additive does not interfere with the cleaning pro
- Cleaning results were reported as percent stain removal using the formula above.
- Two different heterocyclic dry cleaning **surfactants** were used alone or in combination with 0.2 ml of water and liquid carbon dioxide (densified gas). The control was liquid carbon dioxide alone. The water was added directly to the bottom of the autoclave and not on the stain itself and the surfactant was applied directly to the stain on the cloth. After the wash and rinse cycles, cleaning results were evaluated and reported in Table below.

TABLE
Dry Cleaning Results on Grape juice Stains Using
Densified Carbon Dioxide and Heterocyclic Dry Cleaning **surfactants**
% Stain

Stain	Cloth	Surfactant	polar Additive	Removal
Grape juice	Polyester	None	None	2.5
Grape juice	Polyester	None	0.5 ml water	0.3
Grape juice				

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classes:1 510/212 1 134/38 1 510/202 1 510/407 1 510/505 1 510/506
score: 820

keywords: polarity;hydroxide;ester;glycol;alcohol;water;ether;flash;adding;ethers;organic;particles;agitation;instances;surfactants;viscosity;solubility;removing;broad;Spray;dioxide;solvents;Non-aqueous;Water-based;detergents;Cleaning;cleaned;flash;alkaline;ketone;solution;Description;INVENTION;relates;methods;employed;particularly;Specification;used;component;conditions;degree;does;

- ingredients such as thickeners, defoamers, **surfactants** or colorings may be added, as is well known in the art.
- The present invention will best be illustrated by the following series of examples. A series of compositions were prepared and were tested on simulated paint sludge samples. The test samples were prepared by coating the interior of a series of 40 milliliter glass vials with a synthetic paint sludge prepared by mixing equal amounts, by weight, of a white, solvent-based, high solids, acrylic, monocoat enamel (DuPont 5920) with a paint pigment which comprised a fifty-fifty blend of titanium dioxide and yellow iron oxide. A 2 gram sample of the paint sludge was placed in each vial, and the vials were dried at 270.degree. F. for 2 hours to produce highly adherent paint encrustation. The samples being tested were placed in the vial, and shaken on an oscillatory shaker at 400 RPM for 2 hours, at room temperature. The vials were
- ned mixture having very good cleaning qualities. It should be noted that the presences of the excess dibasic ester did not impair of the cleaning ability of the composition, and it is speculated that the excess dibasic ester functioned as an **organic** solvent.

Example 7

This composition comprised 30% of a 3% solution of potassium hydroxide in propylene glycol monomethyl ether; 35% methyl isobutyl ketone and 35% xylene. This composition produced a good cleaning action.

Example 8

This composition was identical to that of Example 7, except that SC-100 was substituted for the xylene. The performance of this composition was generally similar to that of Experiment 7.

Example 9

This composition was generally similar to that of Example 8, except that 2% by weight of sodium hydroxide was substituted for the potassium hydroxide. The performance of this composition was generally similar that of Experiment 8.

Example 10

This composition was generally

- letely ineffective in removing the paint residue.

Comparative Example 15

This composition comprised a 10% solution of potassium hydroxide in propylene glycol. Performance of this composition was poor in removing the paint residue, and dissolution proceeded very slowly.

Comparative Example 16

This composition comprised a 10% solution of potassium hydroxide in Neosol, an ethanol based solvent sold by the Shell Oil Company. This composition was ineffective in removing the paint residue.

Experiment 17

This composition comprised 25% of a 10% solution of potassium hydroxide in propylene glycol monomethyl ether; 50% cyclohexanone and 25% methyl isobutyl ketone. Performance of this composition was good in removing the paint residue.

Example 18

This composition comprised 50% of a 10% solution of potassium hydroxide in propylene glycol monomethyl ether and 50% cyclohexanone. This composition was tested against **particles** of a very heavy paint syst

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classes:1 210/602 1 210/610 1 210/615 1 210/622 1 210/631 1 210/910 1 210/912
score: 807

keywords: ionic;ph;alcohol;water;ether;wash;laundry;rinsing;separating;distillation;separation;textile;organic;primarily;leaving;dirt;hydrophilic;hydrophobic;surfactants;tension;removing;Spray;detergents;Cleaning;additives;cleaned;additive;inert;wash;clothing;laundering;emulsion;alkaline;surfactant;bleach;enzymes;laundry;washing;solution;Description;INVENTION;methods;employed;particularly;claims;used;means;conditions;does;performed;

- to the parameters recited in claim 19, that approximately 80 to 95% of the utilized waste water is reclaimed for a renewed feeding or

resupplying to a laundering or washing process as purified water, there results in an enormously economical process as well as to a rather quick return-of-investment.

Preferably, according to claim 20, the water losses associated with the process are made up by the addition of fresh water and not ****primarily**** by addition of demineralized or de-ionized water.

According to claim 21, the waste water to be purified is treated in the bio-reactor for between one and ten hours, in particular between two and six hours, preferably approximately four hours, wherein the bio-reactor may in given cases be configured for recycling. This has the advantage, that already after 4 hours frequently only 20% of the ****organic**** content compounds remain in the waste water and the remaining 80% have been metabolized by the 1

- laundry waste water specific mixed biocolony or culture.

According to claim 22, the water ****leaving**** the bio-reactor contains essentially only approximately 5 to 20% of the ****organic**** content of the waste water introduced at the supply side, which then may advantageously be simply removed by the downstream adsorber, so that the adsorber has long residence time before it must itself be disposed of or, as the case may be, changed out.

Preferably, according to claim 23, the waste water to be purified can in certain conditions be supplemented with specific nutrients for the mixed bioculture microorganisms, in the case that the microorganisms are unable to obtain a special nutrient from the introduced waste waters.

According to claim 24, the there indicated or listed filler or helper materials can likewise be removed from the water in accordance with the process of the invention, which is particularly advantageous for the reason that the

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classes:1 510/292 1 510/329 1 510/331 1 510/470 1 510/493 1 510/504
score: 792

keywords: glycol;alcohol;water;wash;laundry;fabric;static;textile;organic;agitation;silk;wool;surfactants;thereafter;manufacturing;hydrocarbon;solvents;saturated;formulations;wash cycle;Cleaning;additives;wash;clothing;laundering;surfactant;laundry;washing;fabric;antistatic;solution;Description;INVENTION;relates;employed;particularly;apparatus;working;used;component;conditions;degree;does;

- HE INVENTION

In accordance with the present invention, it has now been discovered that certain especially beneficial end-use-specific glycoside surfactant-based detergent compositions can be suitably prepared by properly formulating one or more glycoside ****surfactants**** with certain antistatic quaternary ammonium ****surfactants**** in the absence of (or at least substantially in the absence of) conventionally employed laundry detergent ingredients such as anionic surfactant ingredients, non-glycosidic ethoxylated nonionic surfactant ingredients and conventional detergent builder materials.

Thus, the present invention, in one of its aspects, is a substantially builder-free fine fabric laundry detergent composition which comprises, on a total composition weight basis:

- a. from about 10 to about 70 weight percent of a surfactant component which consists essentially of a combination of a glycoside surfactant and an antistatic quaternary ammonium s
- about 1250 part per million of a surfactant component consisting essentially of a combination of a glycoside surfactant and an antistatic quaternary ammonium surfactant in a glycoside surfactant to quaternary ammonium surfactant weight ratio of from about 1:3 to about 10:1.

The composition and process of the present invention are especially well suited to and beneficial for the laundering under relatively mild washing conditions (e.g., mild or gentle machine ****agitation**** or handwashing and at low or cold wash water temperature) of fine fabric materials such as silk, nylon, polyester and wool.

It is a particularly noteworthy feature or benefit of the present invention that the aforementioned antistatic quaternary ammonium surfactant materials provide, at a given usage level of same, substantially more pronounced or enhanced antistatic control within the subject glycoside surfactant-based formulations than they do in comparable c

- t 9 to about 13) carbon atoms; y is zero; Z is glucose or a moiety derived therefrom; and x has an average value of from 1.5 to about 5 (especially from about 1.5 to about 3).

Glycoside **surfactants** of particular interest for use in the practice of the present invention preferably have a **hydrophilic**-lipophilic balance (HLB) in the range of from about 10 to about 18 and most preferably in the range of from about 12 to about 14.

Quaternary ammonium **surfactants** suitable for use herein include any of the known members of that particular family of **surfactants** that effectively control the build-up of static electricity on fabric materials washed or otherwise treated therewith and thus generally include those of the formula:

##STR1##

wherein R.sub.4 is a higher alkyl radical having at least about 8 carbon atoms and preferably having between about 12 and about 22 carbon atoms; R.sub.5 is the same as R.sub.4 or is a lower alkyl rad